phyllum Grand'Eury.[3] As contrasted with *Trichopitys* this genus is characterized by smaller, more rigid, and more equally dichotomous leaves, so that a nearly perfect bilateral symmetry is produced. In addition there are features of the fructifications and of the arrangement of sterile leaves on the stem which distinguish the two. Unfortunately, such materials have not been available in the present case.

No described species of the genus are very close to *Trichopitys whitei*. *Trichopitys millerensis* Renault,[4] from the Autun-Epinac Basin shows some resemblance but is larger and more rigid. In addition, the details of venation differ.

A very interesting similarity exists between *Trichopitys* and the Mesozoic genus *Czekanowskia*. This suggests the possibility of extreme antiquity for the Ginkgoales, and this theory receives support from several other Paleozoic genera. It is beyond the scope of this paper to discuss the problem, but it may be pointed out that the criterion of external leaf form is not sufficient basis for a definite statement concerning the stratigraphic range of the Ginkgoales. The fructifications of *Trichopitys hetermorpha* Saporta[5] do not indicate any close affinity with the ginkgophytes as the writer understands them. *Trichopitys* is more likely a pteridosperm, it would seem, although the evidence is very meager. For the present it is best to follow Arber and assign the genus to the Palaeophyllales.[6]

Concerning the age of the beds from which *Trichopitys whitei* was collected, there is a strong suggestion that it is Pottsville. A small flora was found associated and contains several species which are very characteristic of lower Pennsylvanian strata. Since this flora is discussed in full in a paper soon to be published, it is not necessary to go into the details of the correlation here. *Trichopitys whitei* affords little evidence for or against this conclusion, since the genus has a sporadic and incompletely known distribution. It ranges from the "Upper Carboniferous" through the Permian in Europe and has been reported from the Triassic.

[3] GRAND'EURY, F. C. *Flore carbonifère du département de la Loire*, p. 272. 1777.

[4] RENAULT, B. *Bassin houiller et permien d'Autun et Épinac: Atlas*, pl. 82, fig. 2. 1893; text, p. 378. 1886.

[5] SAPORTA, G. DE. *Sur la découverte de deux types nouveaux des conifères dans les schistes permiens de Lodève (Hérault)*. Comptes Rendus, 80: 1020. 1875.

[6] ARBER, E. A. N. O. *On* Psygmophyllum majus *sp. nov. from the Lower Carboniferous rocks of Newfoundland, together with a revision of the genus and remarks on its affinities*. Linnean Soc. London Trans. 7(pt. 18): 405. 1912.

ZOOLOGY.—*New mammals from Arizona, New Mexico, and Colorado.*[1] E. A. GOLDMAN, Biological Survey.

More critical regional studies of the rodent genera *Thomomys*, *Perognathus*, *Dipodomys*, and *Neotoma* have resulted in the segrega-

[1] Received August 24, 1933.

tion of several new geographic races. Some of these are based in part upon material collected many years ago, but it was not until additional specimens were obtained that the distinctive characters became apparent.

Thomomys alexandrae, sp. nov.

Navajo Pocket Gopher

Type.—From plain 5 miles southeast of Rainbow Lodge, near Navajo Mountain, Coconino County, Arizona (altitude 6,200 feet). No. 250969, ♂ adult, skin and skull, U. S. National Museum (Biological Survey collection), collected by E. A. Goldman, June 16, 1933. Original number 23613.

Distribution.—Vicinity of the type locality on the arid, brush-covered plains in the triangular area lying between the Colorado and San Juan rivers and Navajo and Piute creeks, in northern Arizona and extreme southern Utah.

General characters.—A small, cinnamon buffy species; skull slender in proportions; mammae in 4 pairs, pectoral 2–2, inguinal 2–2. Allied to *Thomomys fulvus aureus* of the adjoining desert region of Arizona, but decidedly smaller; color much duller, near cinnamon buff, instead of rich ochraceous tawny; cranial characters distinctive.

Color.—Type (summer pelage): Upper parts light cinnamon buff, purest along sides, the top of head and back somewhat darkened by black-tipped hairs; middle of face and muzzle blackish; black auricular spots conspicuous, encircling entire ears; under parts, forearms, and thighs pale ochraceous buff; feet white; tail brownish above on basal half, becoming white toward tip, and whitish below. Some of the topotypes are distinctly blackish on head. *Young* (in first pelage): Upper parts lighter, more pinkish buffy, except on face which is dusky, much as in adults.

Skull.—Similar in general to that of *T. f. aureus*, but smaller, flatter, more slender in structure; temporal ridges more widely separated; zygomata more slender, the external angle near point of union of maxilla and jugal less prominent; rostrum relatively shallower; audital bullae relatively smaller, less fully inflated; dentition relatively lighter.

Measurements.—Type: Total length, 210 mm.; tail vertebrae, 60; hind foot, 28. An adult male topotype: 214; 61; 28. Two adult female topotypes, respectively: 215, 205; 70, 62; 27, 28. *Skull* (type): Condylobasal length, 38.3; zygomatic breadth, 23.5; greatest breadth across squamosals (over mastoids), 18.8; interorbital constriction, 6.8; length of nasals, 13.5; maxillary toothrow (alveoli), 8.2.

Remarks.—Thomomys alexandrae is evidently allied to *T. f. aureus* which has an extensive range in neighboring territory, but there is no evidence of intergradation. The new species has been isolated perhaps for thousands of years by effective barriers formed by Navajo and Piute creek canyons. Bare rock walls, or cliffs, hundreds of feet in height, extend from the canyon mouths to a very narrow, rocky and sterile backbone forming a dividing line where conditions appear to be unsuitable for pocket gophers. The species is named for Miss Annie M. Alexander whose own faunal investigations and generous support of the studies by others have contributed greatly to knowledge of the mammals of western states.

Specimens examined.—Total number, 11 (2 in collection University of Arizona), all from the type locality.

Perognathus amplus jacksoni, subsp. nov.

Yavapai Pocket Mouse

Type.—From Congress Junction, Yavapai County, Arizona (altitude 3,000 feet). No. 212780, ♂ adult, skin and skull, U. S. National Museum (Biological Survey collection), collected by H. H. T. Jackson, June 21, 1916. Original number 381.

Distribution.—Desert regions of central-western and south-central Arizona, south of the range of the typical subspecies, *Perognathus amplus amplus.*

General characters.—A large, richly colored subspecies, with a broad, heavy skull. Similar in size to *Perognathus amplus amplus* of the Verde River Valley, but paler buff, upper parts less obscured by dusky hairs and cranial characters distinctive; tail slightly crested near end and tufted as in *amplus.* Larger and richer colored, the back less blackish than *P. a. pergracilis* of northwestern Arizona, and skull differing in detail. Decidedly larger than *P. a. taylori* of southeastern Arizona; color slightly paler buff, less mixed with dusky. Similar in size to *P. a. rotundus* of southwestern Arizona, but darker pinkish buff, and skull different. Distinguishable from both *P. a. cineris* and *P. a. ammodytes* of the valley of the Little Colorado River, by larger size and less dusky upper parts (contrasting strongly in color with *cineris*).

Color.—*Type* (fresh pelage): Ground color of upper parts nearly uniform pinkish buff, purest on the lateral line from cheeks across shoulders and along lower part of flanks to thighs, the top of head and back finely and rather inconspicuously lined with black; under parts, fore limbs and hind feet white; ears buffy externally, except anterior fold which is dusky, sparsely clothed internally with blackish hairs, and edged with white near posterior base; a tiny but distinct tuft of white hairs on margin of ear at anterior base; tail thinly haired, light brownish above, dull whitish below, becoming dusky on the small terminal tuft.

Skull.—Similar in size to that of *P. a. amplus,* but less flattened; mastoids narrower, less inflated posteriorly, and less bulging along line of contact with parietals; rostrum and nasals broader, less depressed anteriorly; interparietal less depressed between mastoids; audital bullae and dentition similar. Size about as in *rotundus,* but frontal region less flattened; mastoids less bulging along parietal margins; rostrum broader. Larger than *taylori, cineris,* or *ammodytes.* Compared with that of *pergracilis* the skull is considerably larger, with a relatively narrower frontal region.

Measurements.—*Type:* Total length, 168 mm.; tail vertebrae, 85; hind foot, 21. Average of four adult topotypes: 160 (152–165); 85 (81–87); 21.5 (21–22). *Skull* (type): Length (median line), 25.5; greatest breadth (across audital bullae at meatus), 15; zygomatic breadth (posteriorly), 13.3; interorbital breadth, 5.5; length of nasals, 10; width of nasals (in front of incisors), 2.5; interparietal, 2.8×2.8; maxillary toothrow (alveoli), 3.5.

Remarks.—The material upon which *Perognathus amplus jacksoni* is based has hitherto been regarded by me provisionally as referable to the typical form, *P. a. amplus.* Further study has, however, led me to believe that typical *amplus* may be restricted to the upper part of the Verde River Valley. The

recent discovery of two new subspecies, *P. a. cineris* and *P. a. ammodytes*, described by Benson (Proc. Biol. Soc. Washington, vol. 46, pp. 109–110, Apr. 27, 1933), extended the known range of the species into the Upper Sonoran Zone in the Little Colorado River Valley. Fairly well marked geographic races of *P. amplus* are more limited in distribution than is usual in most species of the genus.

Specimens examined.—Total number, 37, all from Arizona, as follows: Congress Junction (type locality), 17; Kirkland, 17; Phoenix, 1; Rice, 1; Wickenburg, 1.

Dipodomys spectabilis perblandus, subsp. nov.

Western Banner-tailed Kangaroo Rat

Type.—From Calabasas, Santa Cruz County, Arizona (altitude about 3,500 feet). No. 17748/24689, ♀ adult, skin and skull, U. S. National Museum (Biological Survey collection), collected by Vernon Bailey, October 27, 1889. Original number 611.

Distribution.—Western desert region of central-southern Arizona, from the vicinity of Tucson west at least to Gunsight, and south into adjoining parts of Sonora.

General characters.—Closely allied to *Dipodomys spectabilis spectabilis* of southeastern Arizona, but smaller and paler, the upper parts more thinly mixed with black; black facial mask less distinct; tail less extensively tipped with white. Cranial characters also distinctive.

Color.—*Type* (fresh pelage): Upper parts in general light ochraceous buff, purest on cheeks, shoulders, sides, and outer surfaces of thighs, the top of head and back thinly mixed with black; under parts, postauricular and supraorbital spots, fore limbs, hind feet above, hip stripes, and tail at extreme base all around pure white; tail beyond base black mixed with gray above and below, becoming nearly black in a subterminal zone all around, abruptly interrupted by the pure white tip 40 millimeters in length, the sides white along lines narrowing gradually and disappearing in the subterminal area mentioned; soles of hind feet brownish; ears whitish externally, except anterior fold which is dusky, thinly clothed internally with minute black hairs.

Skull.—Similar to that of *D. s. spectabilis*, but decidedly smaller; mastoids relatively smaller; interparietal and supraoccipital usually actually as well as relatively broader at constriction between mastoids; dentition lighter, the incisors and molariform teeth distinctly narrower.

Measurements.—*Type:* Total length, 315 mm.; tail vertebrae, 184; hind foot, 48. Average of 10 adult topotypes: 327 (313–340); 194 (179–204); 48 (44–52). *Skull* (type): Occipitonasal length, 41; greatest breadth (between outer sides of audital bullae), 27.8; breadth across maxillary arches, 26; length of nasals, 14.9; width of nasals (in front of incisors), 4.2; least width of supraoccipital (near interparietal), 2.3; maxillary toothrow (alveoli), 5.2.

Remarks.—*Dipodomys spectabilis perblandus* is a well-marked subspecies, although not far removed geographically from *D. s. spectabilis*. It occupies the desert area west of the range of *spectabilis* which is typical in the higher plateau region of southeastern Arizona.

Specimens examined.—Total number, 44, as follows:

ARIZONA: Baboquivari Mountains (Peters Ranch), 1; Calabasas (type locality), 10; Gunsight, 2; Indian Oasis, 4; La Osa, Pima County, 7; Oracle, 6; Santa Rita Mountains (north base), 2; Tucson, 5; Tucson (30–35 miles south), 3; Tucson (75 miles southwest), 2.

SONORA: Magdalena, 2.

Dipodomys spectabilis clarencei, subsp. nov.

Northern Banner-tailed Kangaroo Rat

Type.—From Blanco, San Juan County, New Mexico. No. 158824, ♂ adult, skin and skull, U. S. National Museum (Biological Survey collection), collected by Clarence Birdseye, November 19, 1908. Original number 443.

Distribution.—San Juan River Valley in northwestern New Mexico, northeastern Arizona and probably southeastern Utah and southwestern Colorado.

General characters.—Similar to *Dipodomys spectabilis spectabilis* of southeastern Arizona but larger; color usually paler and grayer, the upper parts suffused with pinkish instead of ochraceous buff; cranial characters distinctive; tail crested with black and broadly tipped with white as in *spectabilis.* Resembling *D. s. baileyi* of southeastern New Mexico in color, but black mask less distinct across middle of face, the upper surface of muzzle behind nasal pad more extensively white; skull smaller and differing in detail.

Color.—Type (fresh pelage): Upper parts in general near pinkish buff, purest on cheeks, shoulders, sides, and outer surfaces of thighs, the top of head and back more profusely but moderately mixed with black; under parts, postauricular and supraorbital spots, fore limbs, hind feet above, hip stripes, and tail at extreme base all around pure white; tail beyond base black mixed with gray above and below, becoming nearly pure black in a subterminal zone all around, abruptly interrupted by the pure white tip 50 millimeters in length, the sides white along lines narrowing to the subterminal area mentioned; hind legs above ankles blackish all around; soles of hind feet blackish; ears whitish externally, except anterior fold which is black, thinly clothed internally with minute black hairs.

Skull.—Similar to that of *D. s. spectabilis,* but larger; mastoids larger; maxillary arches broader and extending farther forward beyond frontals along outer side of premaxillae (as viewed from above). Compared with that of *baileyi* the skull is smaller, with a relatively broader frontal region; maxillary arches with more strongly developed external angles (tending to form more strongly projecting hooks); incisors narrower.

Measurements.—Type: Total length, 375 mm.; tail vertebrae, 213; hind foot, 54. Two adult topotypes, respectively: 365, 365; 204, 195; 54, 54. *Skull* (type): Occipitonasal length, 44.8; greatest breadth (between outer sides of audital bullae), 29.5; breadth across maxillary arches, 27; length of nasals, 17.2; width of nasals (in front of incisors), 5; least width of supraoccipital (near interparietal), 2.3; maxillary toothrow (alveoli), 6.1.

Remarks.—Typical *Dipodomys spectabilis clarencei* is probably restricted to the San Juan River Valley. Specimens from Gallup, New Mexico, grade toward *baileyi.* No specimens are available from Arizona but E. W. Nelson writing in August, 1909, says: "Much to our surprise we found the sandy mesa on the west side of Chin Lee Valley, from 10 to 25 miles southwest of

Chin Lee, thickly dotted with the unmistakable mounds and burrows of this species" [*Dipodomys spectabilis*]. The new form is named for the collector, Clarence Birdseye, in recognition of his notable contributions to knowledge of wild animal life.

Specimens examined.—Total number, 9, all from New Mexico, as follows: Blanco (type locality), 3; Fruitland, 4; Gallup (15 miles northwest), 2.

Dipodomys ordii evexus, subsp. nov.

Upper Arkansas Valley Kangaroo Rat

Type.—From Salida, Chaffee County, Colorado (altitude 7,000 feet). No. 150990, ♂ adult, skin and skull, U. S. National Museum (Biological Survey collection), collected by Merritt Cary, November 10, 1907. Original number 1245.

Distribution.—Upper part of the Arkansas River Valley, above the Royal Gorge, south-central Colorado.

General characters.—An ochraceous buff subspecies closely allied to *Dipodomys ordii richardsoni* of the prairie region to the eastward, but tail longer, the dusky stripe on under side extending nearer to tip (usually limited to basal half in *richardsoni*), and cranial proportions, especially the smaller mastoids, distinctive. Smaller and darker than *D. o. luteolus* of the plains of Wyoming and Montana. Distinguished from *D. o. montanus* of the upper Rio Grande Valley, southern Colorado, by larger size and rich ochraceous buff coloration, the upper parts much less heavily mixed with black.

Color.—Type (fresh pelage): Upper parts near rich ochraceous buff, thinly mixed with black, the buffy element purest and brightest on cheeks, shoulders, flanks and outer surfaces of thighs; underparts, supraorbital and postauricular spots, fore limbs, hind feet above, and hip stripes pure white; facial mask and soles of hind feet black; ears whitish externally, except anterior fold which is dusky, thinly clothed internally with minute hairs; tail above blackish, becoming brownish at tip, below brownish along basal two-thirds beyond which the white side stripes become confluent.

Skull.—Similar to that of *richardsoni*, but basicranial region more evenly rounded above, owing to slight depression and greater breadth of interparietal and supraoccipital, and to lesser inflation of mastoids; mastoid and audital bullae smaller; maxillary arches less strongly developed; nasals shorter; incisors narrower. Distinguished from that of *luteolus* mainly by smaller size. Compared with that of *montanus* the skull is larger, more robust; mastoids less rounded and inflated; interparietal and supraoccipital relatively broader, less depressed between mastoids.

Measurements.—Type: Total length, 266 mm.; tail vertebrae, 149; hind foot, 42. Average of four adults from type locality: 258 (233–273); 151 (146–159); 42 (41–42). *Skull* (type): Occipitonasal length, 37.3; greatest breadth (between outer sides of audital bullae), 24; breadth across maxillary arches, 21.3; length of nasals, 13.9; width of nasals (in front of incisors), 3.8; least width of supraoccipital (near interparietal), 3; maxillary toothrow (alveoli), 4.8.

Remarks.—The differential characters of the kangaroo rats inhabiting the high valley near the headwaters of the Arkansas River were noted by me in identifying material obtained by Merritt Cary in connection with the biolog-

ical survey of Colorado many years ago. At that time, however, it seemed best to refer them to *richardsoni* and this course was followed by Cary (North Amer. Fauna No. 33, pp. 140–142, Aug. 17, 1911) who says of them: "The Salida series is not typical *P[erodipus] richardsoni*," and he further remarks in regard to the animals of the area: "The Royal Gorge, and in fact much of the Canyon of the Arkansas, would seem to prevent continuity of range from the plains." *D. o. evexus* is not very unlike typical *D. o. ordii* of western Texas in color, but is a larger, more robust animal, differing also in cranial details, and requiring no close comparison.

Specimens examined.—Seven, all from the type locality.

Dipodomys ordii cleomophila, subsp. nov.

Cinder Bed Kangaroo Rat

Type.—From 5 miles northeast of Winona, Coconino County, Arizona (altitude 6,200 feet). No. 226348, ♀ adult, skin and skull, U. S. National Museum (Biological Survey collection), collected by E. A. Goldman, July 16, 1917. Original number 23101.

Distribution.—Little Colorado Valley slopes of the Coconino and Mogollon plateaus from Flagstaff and vicinity to Springerville, eastern Arizona.

General characters.—Closely allied to and intergrading with *Dipodomys ordii longipes* of the Painted Desert region, northeastern Arizona, but upper parts distinctly darker, near cinnamon buff instead of light ochraceous buff; black facial markings more distinct; skull slightly different. Distinguished from *D. ordii chapmani* of the Verde River Valley by more robust proportions, and much richer, more rufescent coloration.

Color.—Type: Upper parts in general near cinnamon buff (Ridgway, 1912), moderately mixed with black, the buffy element purest and most intense on middle of face, shoulders and flanks; under parts, postauricular spots, fore limbs, hind feet above, usual hip stripes, and tail at extreme base all around pure white; tail beyond extreme base blackish along upper and lower median stripes to near tip where the lengthening hairs become dusky all around, the sides white to subterminal area mentioned; pencilled tip of tail inconspicuously dusky, the dark points of hairs only partially concealing the white under color; soles of hind feet blackish to toes, which are white; ears thinly clothed with short hairs, blackish internally and whitish externally, except anterior fold which is dusky; blackish facial markings broad and distinct. *Young* (in first pelage): Decidedly darker, more cinnamon buffy than in *longipes* of corresponding age.

Skull.—Essentially as in *D. o. longipes* but usually slightly smaller, with smaller mastoids, and relatively narrower maxillary arches. Much larger than that of *D. o. chapmani*, with relatively larger mastoids.

Measurements.—Type: Total length, 250 mm.; tail vertebrae, 149; hind foot, 41.5. Five adult topotypes: 253 (245–260); 143 (135–149); 42 (40–43.5). *Skull* (type): Greatest length (on median line), 37.5; greatest breadth (between outer sides of audital bullae), 25.2; breadth across maxillary arches, 20.5; least width of supraoccipital (near interparietal), 2.2; maxillary toothrow (alveoli), 5.

Remarks.—Like several other geographic races of small rodents inhabiting the volcanic region east of San Francisco Mountain, *D. o. cleomophila* is

characterized by relatively darker coloration. It differs from *D. o. longipes* of the adjoining Painted Desert much as *Perognathus flavus fuliginosus* and *Perognathus apache cleomophila* differ from *P. f. hopiensis* and *P. a. apache*, respectively. Specimens from Walnut Tank, 10 miles north of Angell and from Cedar Ranch Wash, a short distance west of the Little Colorado River grade toward *longipes*, but especially in the more distinct blackish markings are nearer to the new form. No intergradation is apparent with *D. o. chapmani*, which is isolated by the higher parts of the Coconino-Mogollon Plateau. The name of this subspecies is derived from that of the plant, *Cleome serrulata*, many seeds of which were found in the cheek pouches of the kangaroo rats at the type locality.

Specimens examined.—Total number, 39, from Arizona, as follows: Cedar Ranch Wash (3 miles above confluence with Little Colorado River, near Cameron), 10; Flagstaff, 1 (skull only); Tanner Tank, 2; Springerville, 7; Walnut Tank (10 miles north of Angell), 10; Winona (5 miles northeast—type locality), 9.

Dipodomys ordii nexilis, subsp. nov.

Upper Colorado Valley Kangaroo Rat

Type.—From 5 miles west of Naturita, Montrose County, Colorado. No. 149938, ♂ adult, skin and skull, U. S. National Museum (Biological Survey collection), collected by Merritt Cary, July 20, 1907. Original number 1068.

Distribution.—Narrow valleys along the upper affluents of the Colorado River, the Grand, Gunnison, and Dolores rivers, in southwestern Colorado. Probably occurs also in the Colorado River Valley, southeastern Utah.

General characters.—A large, comparatively dark subspecies, with black markings well developed. Closely allied to *D. o. longipes*, but decidedly darker; black facial mask much more prominent; ears, soles of hind feet, and tail above and below more extensively black; tail with lateral white lines narrower, and dark lines correspondingly broader; cranial details slightly different. Similar in color to *D. o. cleomophila*, but larger, and still darker in tone; skull more massive.

Color.—*Type* (acquiring fresh pelage): Upper parts near cinnamon buff, purest on cheeks, shoulders, flanks and thighs, the top of head and back moderately mixed with black; under parts, supraorbital and postauricular spots, forelimbs, upper surface of hind feet, and hip stripes pure white; facial mask deep black, broad and distinct across muzzle; inner sides and anterior folds of ears blackish; soles of hind feet deep black from base of toes to heels; tail with broad blackish stripes above and below, becoming brownish all around at tip, the white lateral lines narrow—only about half the width of the dark lines.

Skull.—Very similar to those of *longipes* and *cleomophila*, but mastoid and audital bullae usually still more distended; rostrum and nasals usually slightly broader.

Measurements.—*Type:* Total length, 268 mm.; tail vertebrae, 147; hind foot, 45. Average of three adults from type locality: 271 (265–280); 148 (142–154); 45 (45–45). *Skull* (type): Occipitonasal length, 39; greatest breadth (between outer sides of audital bullae), 26; breadth across maxillary

arches, 21.3; length of nasals, 14.6; width of nasals (in front of incisors), 4.3; least width of supraoccipital (near interparietal), 2.3; maxillary toothrow, 5.2.

Remarks.—Dipodomys ordii nexilis probably intergrades with *longipes*, along the narrow valley of the Colorado River in southeastern Utah. Specimens from Fruita and Grand Junction are lighter buff than those from the type locality, and more closely approach *longipes* in color. In the distension of the mastoid and audital bullae, however, they are very similar to topotypes of the new form. The range of *nexilis* is separated from that of *D. o. evexus* by the high, narrow continental backbone formed by the Rocky Mountains. These subspecies of *D. ordii* contrast strongly in cranial features, especially the disparity in the size of the mastoid bullae.

Specimens examined.—Twelve, all from Colorado, as follows: Coventry, 2; Fruita, 1; Grand Junction, 4; Hotchkiss, 1; Naturita (type locality), 4.

Neotoma mexicana inopinata, subsp. nov.

Chuska Mountains Wood Rat

Type.—From Chuska Mountains, northwestern New Mexico (altitude 8,800 feet). No. 158395, ♂ adult, skin and skull, U. S. National Museum (Biological Survey collection), collected by Clarence Birdseye, October 3, 1908. Original number 246.

Distribution.—Broken or mountainous areas in northwestern New Mexico, northeastern Arizona, southwestern Colorado and probably southeastern Utah.

General characters.—Similar in size to *Neotoma mexicana fallax* of the Rocky Mountains of Colorado, but color paler, and cranial characters distinctive. Distinguished from *N. m. pinetorum* of the San Francisco Mountain region, by smaller size and decidedly paler color.

Color.—Type (fresh autumn pelage): Upper parts light ochraceous buff, purest on cheeks, shoulders, and sides, rather thinly overlaid on top of head and over back by black-tipped hairs; under parts white, the fur basally plumbeous, except axillae and small areas on inner sides of thighs where the hairs are pure white to roots; ears dusky, narrowly edged with gray; feet white; tail sharply bicolor, brownish with a slight grayish admixture above, white below. Young individuals are paler and grayer than adults in general tone.

Skull.—Similar in size to that of *fallax*, but more angular, the basicranial ridges more prominent, and braincase less evenly rounded; frontal region narrower posteriorly, the supraorbital ridges more nearly parallel (supraorbital ridges more divergent posteriorly in *fallax*); premaxillae usually less extended posteriorly, only slightly exceeding nasals (usually reaching well beyond nasals in *fallax*); outer wall of antorbital foramen broader, reaching farther anteriorly, the antorbital notch slightly deeper as viewed from above; dentition about the same. Closely resembling that of *pinetorum*, but smaller; zygomata relatively less widely spreading.

Measurements.—Type: Total length, 364 mm.; tail vertebrae, 160; hind foot, 36. An adult male topotype: 360; 161; 36. *Skull* (type): Greatest length, 46.2; condylobasal length, 43.9; zygomatic breadth, 24; interorbital

constriction, 5.3; length of nasals, 19.2; length of incisive foramina, 10; length of palatal bridge, 8.5; maxillary toothrow (alveoli), 9.

Remarks.—The collection of additional specimens from Arizona in recent years has indicated the desirability of recognizing a new geographic race of *Neotoma mexicana*, with a general range as here outlined. Specimens from several localities in northwestern New Mexico and southwestern Colorado, formerly referred by me (North Amer. Fauna, No. 31, pp. 57–58, Oct. 19, 1910) to *fallax* are transferred to the new form. In color *N. m. inopinata* resembles typical *mexicana*, but is much larger and evidently more nearly related to *fallax* and *pinetorum*. It apparently intergrades with both.

Specimens examined.—Total number, 20, as follows:

Arizona: Tunitcha Mountains, 4 (Canyon del Muerto, 6,800, feet, 1; head of Spruce Creek, 9,000 feet, 2; Wheatfield Creek, 7,000 feet, 1); Lukachukai Mountains (8,000 feet), 1.

Colorado: Ashbaugh Ranch, Montezuma County, 1.

New Mexico: Chuska Mountains (type locality), 7; Fruitland, 2; Gallup, 2; Zuni Mountains, 3.

Neotoma micropus leucophaea, subsp. nov.

White Sands Wood Rat

Type.—From White Sands, 10 miles west of Point of Sands, White Sands National Monument, Otero County, New Mexico (altitude 4,100 feet). No. 251057, ♂ adult, skin and skull, U. S. National Museum (Biological Survey collection), collected by W. P. Taylor, May 6, 1933.

Distribution.—Known only from the dunes of whitish drifted sand in the vicinity of the type locality.

General characters.—An ashy gray subspecies, closely allied to *Neotoma micropus canescens* of the surrounding territory, but still paler; fur of under parts more extensively white to roots; ears grayer; tail brownish black, mixed with gray above (more nearly pure black in *canescens*).

Color.—*Type* (fresh summer pelage): Upper parts pale ashy gray or near pale smoke gray (Ridgway, 1912), purest on cheeks, shoulders, and sides, the top of head and back thinly mixed with black producing a finely lined effect; under parts white, the fur pure white to roots nearly everywhere except on sides of abdomen where the basal color is pale plumbeous; ears scantily haired, brownish gray externally, grayish internally; feet white; tail brownish black mixed with gray above, white below.

Skull.—As in *canescens*.

Measurements.—*Type:* Head and body (tail defective), 198 mm.; hind foot, 36. An adult male topotype: 348; 139; 34. *Skull* (type): Greatest length, 45; condylobasal length, 43.9; zygomatic breadth, 25.3; interorbital constriction, 5.9; length of nasals, 17.5; length of incisive foramina, 9; length of palatal bridge, 8.7; maxillary toothrow (alveoli), 8.9.

Remarks.—*Neotoma micropus leucophaea* is a slightly differentiated, local race probably restricted to the dunes of whitish drifted sand which, in contrast with the darker and harder soils of the surrounding country, are so

conspicuous a feature of the land surface miles in extent in Otero County, New Mexico. It is another example of the evident relation of color to environment in many mammals. Pallid coloration in this case is associated with whitish sand. The new form requires close comparison only with *canescens*.

Specimens examined.—Four, all from the type locality.[2]

[2] One in Mus. Univ. of Arizona.

ENTOMOLOGY.—*New Rutelinae (Col. lamell.) in the United States National Museum.*[1]

FRIEDRICH OHAUS, Mainz, Germany. (Communicated by HAROLD MORRISON.)

In a collection of Rutelinae sent to me for naming there were the following new species, the descriptions of which I publish herewith.

Hypaspidius morio, n. sp.

Oblongo-ovatus, postice leviter ampliatus, supra et subtus unicolor niger nitidus; supra glaber, pygidio, pectore pedibusque sparsim fuscohirsutus. Clipeus oblongo-parabolicus, dense aciculatus, margine leviter elevatus. Caput, thorax et scutellum polita vix perspicue disperse punctulata. Scutellum longitudine vix latius. Elytrorum striae in disco regulares at non profundae, basin et apicem versus evanescentes, in lateribus irregulares plerumque evanescentes, interstitio subsuturali punctis nonnullis parvis. Pygidium dense aciculatum sericeum, apice et lateribus fusco-pilosum. Abdominis segmenta linea transversa punctorum piligerorum instructa, membrana inter sternitum ultimum et penultimum lata flavorufa. Sterna et coxae dense aciculata et fusco-pilosa; processus sternalis latus brevis apice rotundatus paulo declivis. Antennae fuscae. Aedeagus, Fig. 1.

Length, 25–26, breadth, 15.5–16, mm. ♂ ♀.

Locality, Venezuela: Merida.

Type and paratype, U.S.N.M. Cat. No. 43318.

Anomala (Aprosterna) quirina, n. sp.

A. cincta Say et *testaceipennis* Bl. affines. Oblongo-ovata, postice leviter ampliata, parum convexa, flavotestacea nitida, supra capita, thorace (lateribus exceptis), scutello et elytrorum margine angusto, subtus tibiis tarsisque laete viridi-aeneis; supra glabra, subtus cum pygidio sparsim flavopilosa. Clipeus cum fronte subtiliter dense rugulosa, vertex, thorax et scutellum fortius singulatim punctata; elytra regulariter seriato-punctata, punctis fortibus, seriebus vix vel non sulcatis. Pygidium punctis annularibus transversim confluentibus dense obtectum, parum nitidum, apice et lateribus solum sparsim pilosum. Abdominis sternita medio sparsim, lateribus densius confluenter punctata; metasterni latera dense confluenter punctata ac pilosa; mesosternum inter coxas intermedias latum tumidulum, at coxas non superans. Tibiae anticae tridentatae, intermediae et posticae suratae, bicarinatae. Antennae fulvotestaceae, clava concolore.

Length, 13–14, breadth, 7–7.5 mm. ♂ ♀.

[1] Received July 14, 1933.